

2019

## **Annual IMPACT report 2019: A report by the IMPACT Evaluation Team**

IMPACT Management Team

IMPACT Evaluation Team

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# IMPACT

Instruction Matters: Purdue Academic Course Transformation

2019 Annual Report

## EXECUTIVE SUMMARY

The IMPACT program continues to lead the way in large-scale course transformation programs in the United States. The scope of IMPACT has grown to include 350 faculty transforming more than 600 courses at Purdue. Over 70% of all undergraduate students enrolled in at least one IMPACT course in the 2018-2019 academic year (AY2019). After completing the IMPACT FLC, faculty report statistically significant increases in student engagement, teaching satisfaction, and improvements in pedagogical practices. Students in highly student-centered courses report higher levels of autonomy, competence and relatedness as well as increased self-determined motivation and higher grades. Specifically, twelve large, foundational courses with high DFW rates were transformed through IMPACT, now show significant decreases in the DFW rate, decreasing time to degree by allowing more students to pass these foundational courses. This report highlights the scope, assessment and accomplishments of IMPACT to date, and considers future directions.

## INTRODUCTION

The mission of IMPACT is to create student-centered teaching and learning environments by transforming courses using research-based practices. IMPACT goals emphasize:

- **Refocusing the campus culture on student-centered pedagogy and student success;**
- **Increasing student engagement, competence, and learning gains;**
- **Focusing course transformation on research-based pedagogies; and**
- **Reflecting, assessing, and sharing results to benefit future courses, students, and institutional culture.**

IMPACT, a faculty development program, uses a cohort-based model built around a strong faculty learning community (FLC). It is a partnership among the Center for Instructional Excellence (CIE), Purdue Online (PO), Purdue University Libraries and School of Information Studies (PULSIS), Institutional Data Analytics and Assessment (IDA+A), and the Evaluation and Learning Research Center (ELRC), with support from the President's and Provost's Offices. Staff and faculty from these units work in teams with IMPACT Faculty Fellows to:

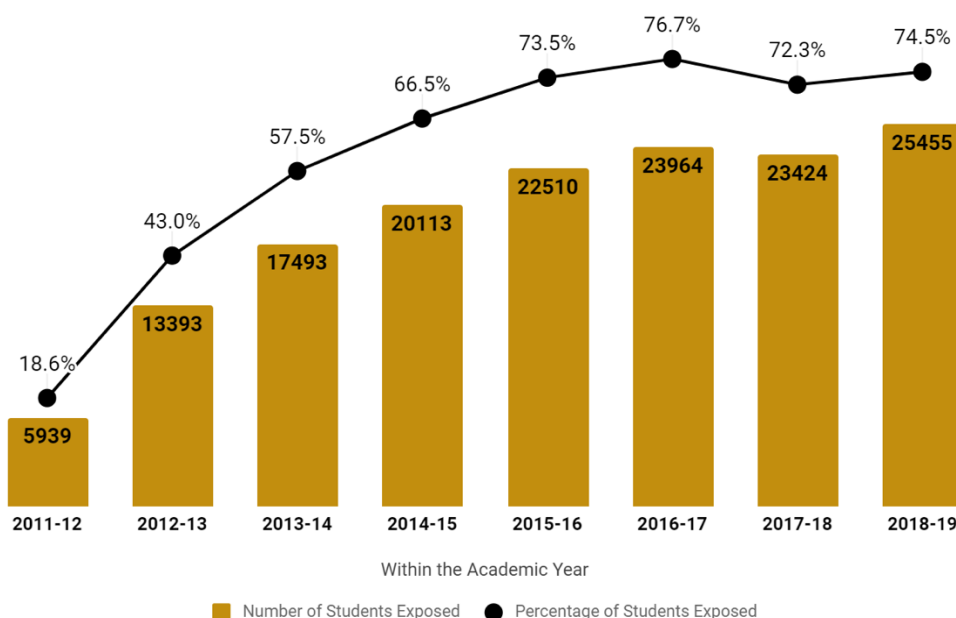
- **Define an appropriate transformation goal for their particular course that takes into account content, discipline, course size, faculty preferences, and abilities;**
- **Identify course-specific learning outcomes; and**
- **Map those learning outcomes to course activities and assignments (papers, exams, homework, projects, etc.).**

## THE SCOPE OF IMPACT

### By Students

IMPACT directly affects a large majority of Purdue undergraduate students, as most enroll in an IMPACT course at some point during their time at Purdue. During AY2012, the first year of program implementation, 20% of undergraduate students were exposed to at least one IMPACT course. Figure 1 shows the rates and counts of undergraduate students exposed to IMPACT *within* each academic year, illustrating the growth in the reach of IMPACT by both percent of undergraduate students impacted and number of courses offered over time. By 2016, these counts/rates plateaued, as IMPACT had mostly saturated large-enrollment, foundational courses and began to expand to smaller course transformations. Observed changes in the rates since 2016 stem from differences in courses offered (or not offered).

**Figure 1. Rate and Counts of Undergraduate Students exposed to IMPACT, within each Academic Year**



From project inception in fall 2011 through summer 2019, 88.2% of undergraduate students registered for at least one undergraduate IMPACT course during these terms<sup>1</sup>. This rate trends downward during fall terms, due to the influx of new students in August; however, this rate rises by the end of the academic year, showing most new students get exposed to at least one IMPACT course within their first year at Purdue.

## By Faculty and Courses

IMPACT accomplishments relative to faculty and courses from the first FLC in summer 2011 through summer 2019 include:

- Offering 17 FLCs<sup>2</sup> ;
- Averaging 21 faculty per IMPACT cohort (with a range of 11 to 34)
- Equipping 350 faculty<sup>3</sup> (as shown in Figure 2) at Purdue with the knowledge, skills, and support to transform their courses to include research-based student-centered pedagogies;
- Transforming 618 unique courses<sup>4</sup> (as shown in Figure 3), including:
  - 325 courses transformed by IMPACT Fellows during an IMPACT FLC, and
  - 326 additional courses transformed by IMPACT Fellows after participating in the IMPACT FLC (these are tracked as “IMPACT-Influenced” courses).

<sup>1</sup> Proportion based on the count of students registered for at least one course as of the census date in the specified academic period. Undergraduate classification also based on census, and includes 01, 02,...,08, but excludes GR and PR.

<sup>2</sup> FLCs offered each fall and spring semester from summer 2011 through summer 2019, plus a few summer terms.

<sup>3</sup> An FLC participant is counted only once, regardless of the number of times s/he participated in the IMPACT FLC. IMPACT Fellows participating more than once include (a) faculty transforming additional course(s), and (b) faculty wishing to “refresh” the transformation of the same course.

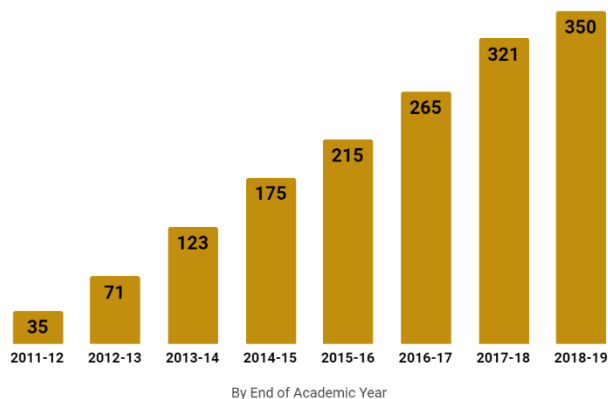
<sup>4</sup> A course gets counted only once, regardless of the number of IMPACT Fellows involved in the course transformation. A course is also counted only once if:

- The course was renamed (ex: EAS10400 is now EAPS10400, but both courses are tracked as EAPS10400 in analysis of the data.)
- Multiple courses are cross-listed. (ex: PHIL23000 and REL23000 are cross-listed, but tracked and reported as the single course “PHIL23000&REL23000.”)

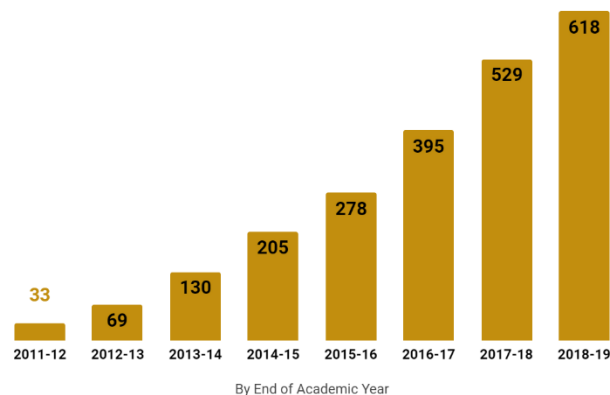
In cases where one Fellow reports an IMPACT-Influenced course previously transformed by another IMPACT Fellow, the course is reported here as an IMPACT course, to avoid duplicate of counts.

- Transforming at least one course from every college/school (as shown in Figure 5). A historical list of IMPACT courses, Fellows, and cohorts is available on the [IMPACT website](#).

**Figure 2. IMPACT Fellows (by End of Academic Year)<sup>5</sup>**



**Figure 3. IMPACT Courses (by End of Academic Year)<sup>6</sup>**



**Figure 4. Cumulative Count of IMPACT Courses by Course College<sup>7</sup>**

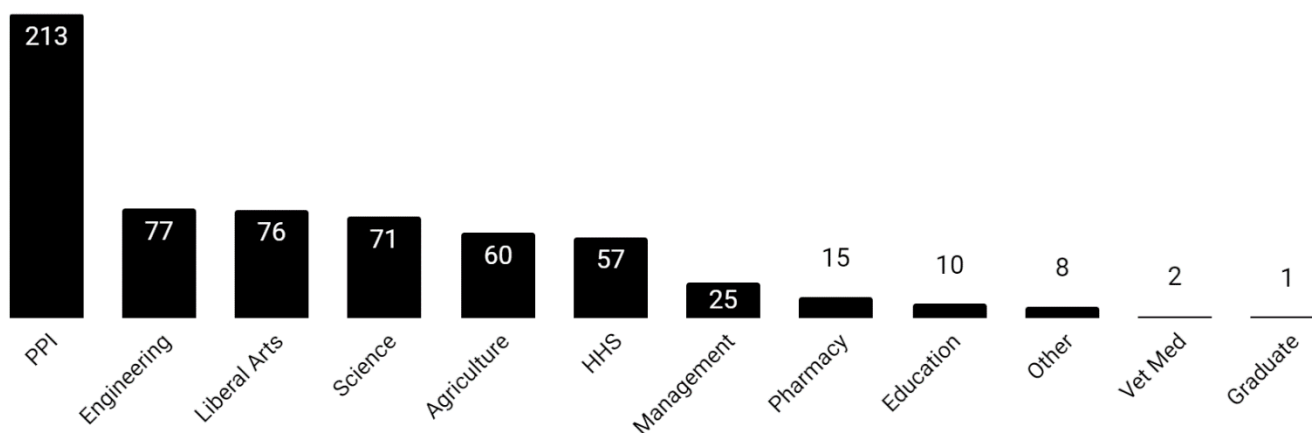


Figure 3 shows the growing cumulative count of IMPACT or IMPACT-influenced courses, which is a consequence of more faculty participants in IMPACT FLC each term, plus many IMPACT Fellows reporting their IMPACT-Influenced courses. Yet the counts/rates of IMPACT courses offered may not be sustained at the same rate, due to Fellow attrition (e.g., retiring or leaving Purdue) or course attrition (e.g., Fellows stop teaching a transformed course). While course attrition is an unfortunate consequence of changes to Fellows' teaching loads or course scheduling, the count of IMPACT-Influenced courses reported by faculty shows a cultural shift towards student-centered teaching and learning. IMPACT will need to continue to develop and

<sup>5</sup> Cumulative faculty fellows counted by calendar year. Each Fellow is counted only once, regardless of the number of courses they transform, or number of time they participated in the IMPACT FLC.

<sup>6</sup> Cumulative course transformations counted by academic year, and includes IMPACT-Influenced courses, as reported by IMPACT Fellows. Each course is counted only once, based on the first FLC the course transformed in an IMPACT FLC, or the first time it was reported as an IMPACT-Influenced course, regardless of the number of IMPACT Fellows associated with the course.

<sup>7</sup> Counts include all courses transformed during an IMPACT FLC, and all other courses reported as IMPACT-Influenced. Each course counted only once, regardless of the number of IMPACT Fellows associated with the course. Courses classified as 'other' are not associated with an academic college, and including honors, and graduate courses.

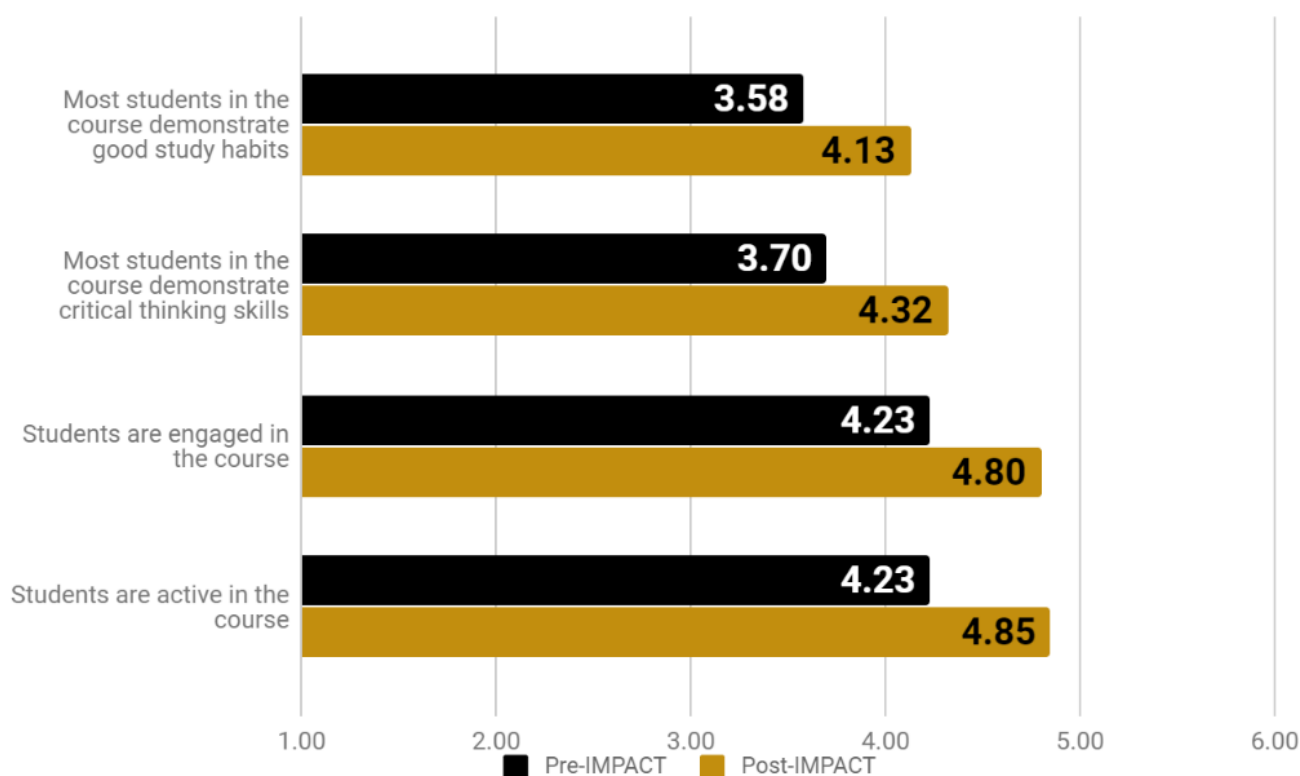
support new and existing faculty and address institutional barriers (as described under “Sustaining IMPACT” on page 9) in order to maintain and institutionalize this student-centered culture.

## KEY FINDINGS FROM EVALUATION OF IMPACT

### IMPACT Fellow Perceptions<sup>8</sup>

Faculty view IMPACT as a valuable source of professional development that positively impacts both their own teaching practice and student outcomes. Based on pre-participation and post-implementation surveys, IMPACT Fellows (n=100) report significant increases<sup>9</sup> in both student engagement and their own satisfaction with teaching after implementing their transformed course. They also report significant improvements in their pedagogical practices (including use of technology) and experiences with classroom learning spaces after implementing their IMPACT course. Figure 5 to Figure 8 illustrate these reported changes on a six point Likert scale where higher numbers indicate stronger agreement.

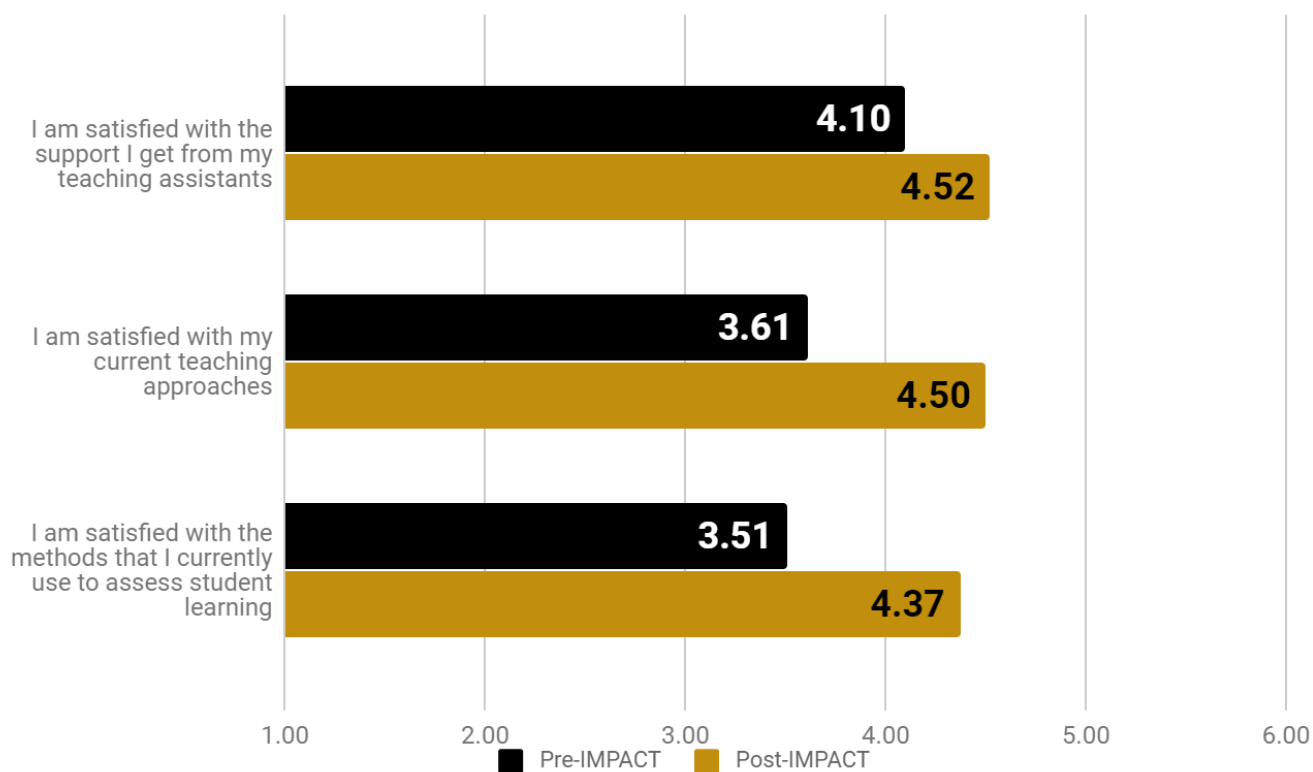
**Figure 5. Student Engagement Increases Reported by IMPACT Faculty**



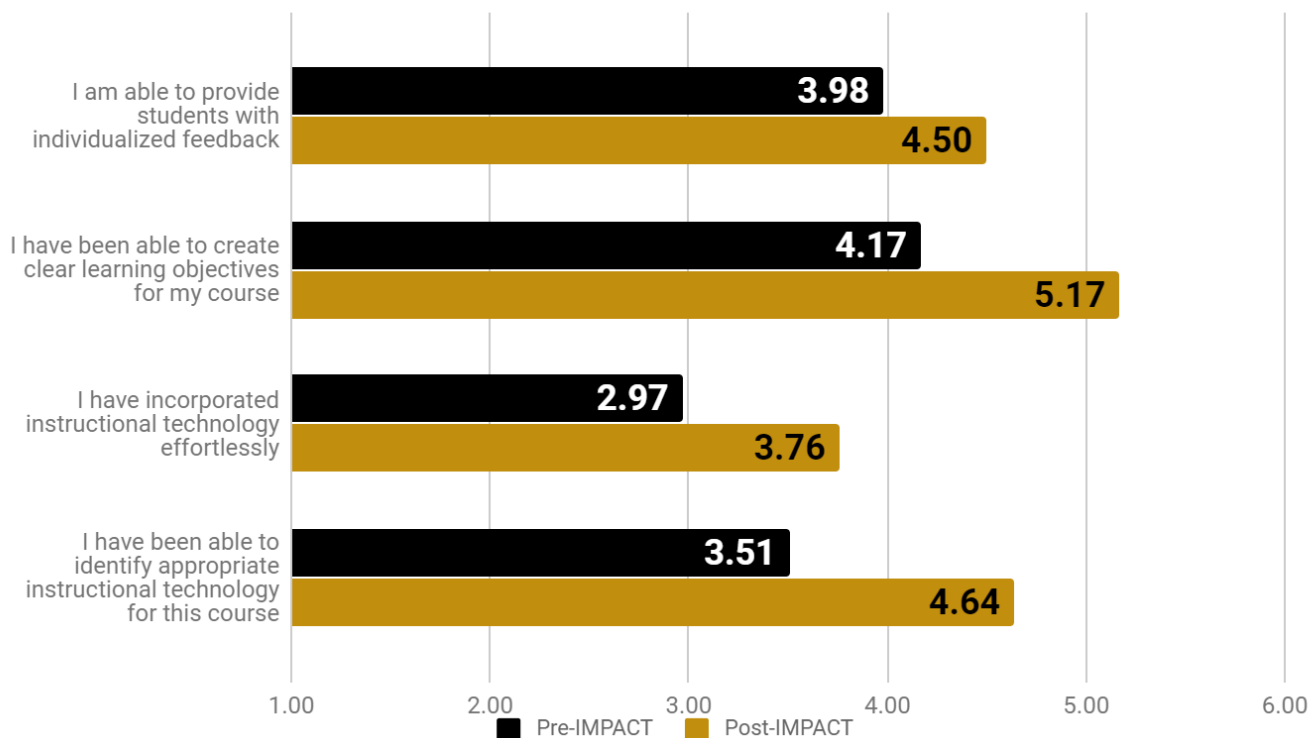
<sup>8</sup> Faculty perceptions based on data gathered, analyzed, and reported by ELRC staff in the internal report “Annual Report Briefing 2016, Cumulative Analysis.” Data collection includes surveys, focus groups, and interviews with IMPACT FLC participants.

<sup>9</sup> Statistically significant increases as  $p < .05$  via paired t-test of sample means.

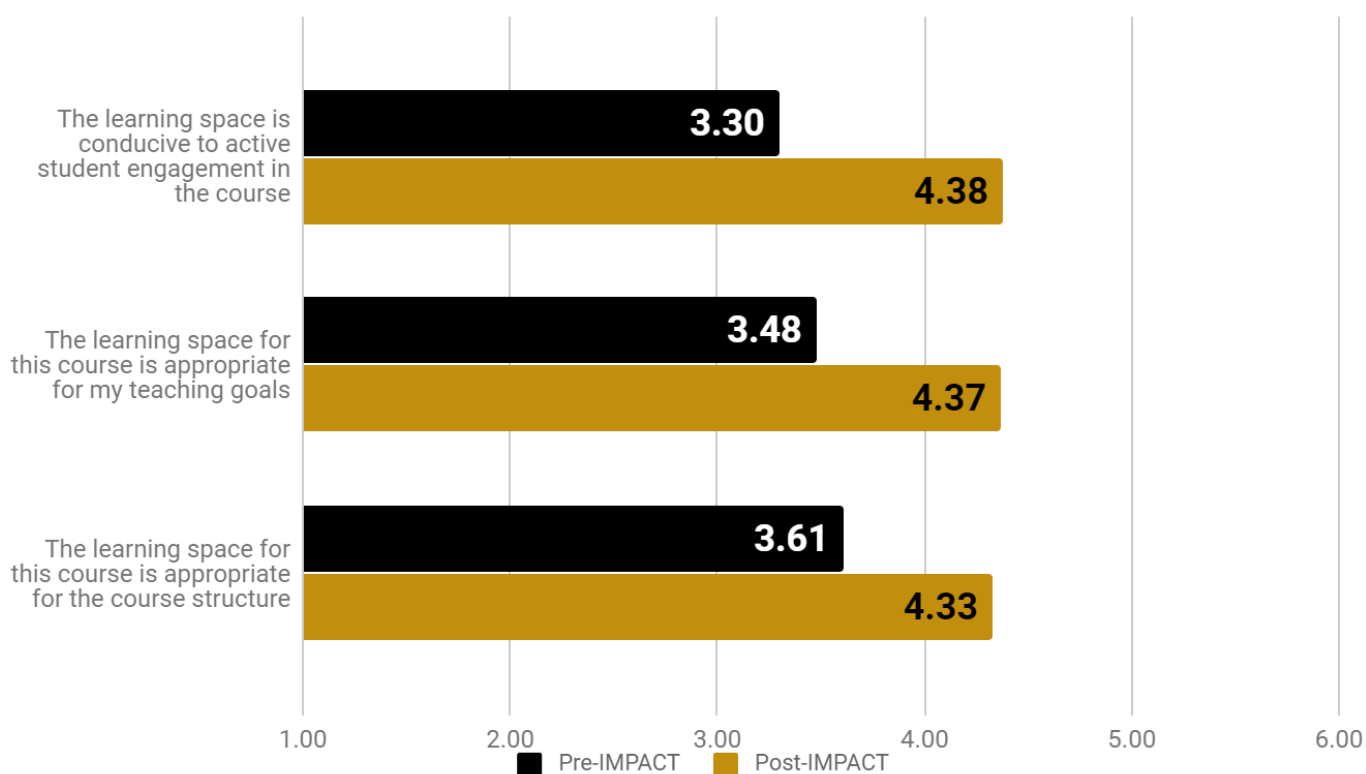
**Figure 6. Teaching Satisfaction Increases Reported by IMPACT Faculty**



**Figure 7. Pedagogical Practices Improvements Reported by IMPACT Faculty**



**Figure 8. Learning Space Satisfaction Increases Reported by IMPACT Faculty**



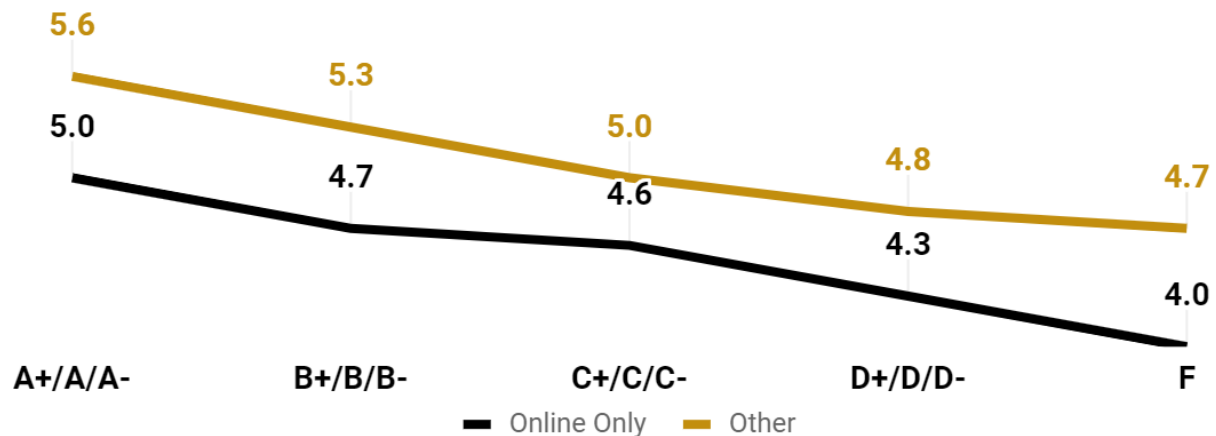
## Student Centeredness

Faculty successfully implement student-centered pedagogies in their IMPACT course transformations, as evidenced by student surveys. The student centeredness ratings are based on students' perceptions of the autonomy-supportiveness of the learning climate established by the instructor in the course. In AY2019, 84.4% of all students who responded to the survey characterized their IMPACT courses as having highly autonomy-supportive learning environments.

Figure 9 illustrates the relationship between a student's performance in a class and his/her perception of autonomy-supportiveness, for all courses with student perceptions data collected since spring 2014. Matching individual cases from the student survey to students' performance, we see small statistically significant positive correlations (see Table 1) between students' perceptions of how autonomy-supportive their learning environments are and their mean final grade value. Due to variations in grading schemas between courses (and sometimes between sections of the same course) the best uses of final grade values are within courses.



**Figure 9. Mean Autonomy-Support Ratings, by Final Grade Group, Spring 2014 through Summer 2019**



**Table 1. Correlations of Final Grade Value to Autonomy-Support Ratings, by Student**

		Transformation Type	
		Online Only	Other
<i>Mean Autonomy-Support Ratings, By Final Grade</i>	Overall	4.8	5.4
	A+/A/A-	5.0	5.6
	B+/B/B-	4.7	5.3
	C+/C/C-	4.6	5.0
	D+/D/D-	4.3	4.8
	F	4.0	4.7
<i>Correlation of Final Grade Value to Autonomy-Support Ratings</i>	<i>R</i>	0.202	0.196
	<i>N</i>	1071	48669
	<i>p</i>	<.001	<.001

## Student Academic Performance

An initial goal of IMPACT was to increase student academic success and decrease time to degree by transforming traditionally difficult courses, based on the following criteria:

- High failure: the pre-IMPACT DFW rate for the course is 20% or higher,
- Large: the enrollment within the academic year exceeds 100 students, and
- Foundational: the course number is 29999 or less.

Within AY2019, 16 courses met the pre-IMPACT high failure criterion, and at least one of the other criteria. For these 16 courses:

- The DFW rate was lower in IMPACT sections for twelve of these courses, compared to the pre-IMPACT DFW rate.
- DFW rates decreased an average of 6.0% when compared to the pre-IMPACT DFW rate.
- This rate of change corresponds to an additional 587 students passing their course with a C- or higher in AY2019.

These data support a positive role of IMPACT in increasing student academic success and decreasing time to degree, since the decreased DFW rate suggests more students will be able to move forward without the need to retake these foundational courses.

## Sustaining IMPACT

Although faculty recognize the positive impacts of student-centered pedagogies on both their students and their own practice, IMPACT Fellow responses on longitudinal surveys (n=93) point to a need for further inputs and modifications at the institutional level to sustain these changes. For example, fewer than half the responding Fellows (47%) indicated they felt “completely supported” by their department and colleagues in the course transformation process.

**Figure 10. Faculty Perceptions of Course Sustainability**



Responses related to sustainability and transferability are more complex (see Figure 10), but likewise suggest areas for continued attention. Overall, 87% of faculty reported that their transformation was “sustainable” or “mostly sustainable.” Sustainability was defined as “changes that you feel you could maintain without exerting a SIGNIFICANT amount of additional effort beyond what was required to transform and initially implement the course.”, Faculty did report encountering a number of challenges to sustainability. Those most often cited (along with the percentage of faculty identifying this challenge) include:

- Lack of time allocated for teaching duties (30%)
- Lack of teaching assistants (25%)
- Lack of access to appropriate learning spaces (23%)
- Negative reactions from students (23%)

## EXPANSION OF IMPACT

### IMPACT Access

In order to provide an alternative to the full face-to-face IMPACT program, the IMPACT team is developing an online, modularized faculty development program. The online modules share the same goal of helping faculty create more autonomy-supportive, student-centered learning environments, but aim to provide more flexibility both in terms of time commitment and content. Faculty can complete the modules on their own time and are not required to choose a specific course to transform. The IMPACT Access program is currently being piloted as a hybrid program, allowing for increased flexibility while maintaining benefits of an in-person learning community.

A preliminary pilot of the IMPACT Access hybrid program was launched in spring 2019. Eight faculty fellows completed the first two topics, each of which contained four modules. After completing each topic, faculty fellows met with two facilitators to reflect on the material. Fellows provided formative feedback to improve the online modules, and their feedback was mostly positive: the modules were a good use of their time and they planned to implement changes to their teaching. Fellows especially enjoyed the in-person reflection sessions, which allows for peer feedback and the opportunity for them to reflect on their teaching.

A full pilot of the IMPACT Access hybrid program will be conducted in fall 2019. Six faculty fellows will be enrolled in the pilot, which will cover all five topics. In addition to an in-person kickoff meeting, fellows will meet with the two facilitators a total of five times, following the completion of each Topic, to reflect on the content with their peers.

## **IMPACT Scholarship of Teaching & Learning (SoTL) Research Project**

The IMPACT SoTL Project was created to facilitate IMPACT-related scholarship of teaching and learning projects, as well as improve assessment of the IMPACT program by collecting specific student achievement data. In addition to a small incentive, the project provides resources and support to current IMPACT fellows to design, conduct, and disseminate a research project related to their course transformation. The project was piloted in spring 2019 with three IMPACT fellows and there are currently we expect up to five fall 2019 IMPACT fellows to participate in the project. Fellows have up to two years to complete their projects and present the results in a scholarly forum.

## **IMPACT SoTL Course Portfolio Project**

In fall 2019 we will launch the IMPACT Course Portfolio Project. As a scholarship-based extension of IMPACT, fellows will collaborate with support team members to analyze an element of their transformation through a scholarly project. Fellows will construct a proposal/hypothesis, collect a variety of types of data, analyze student work in new ways, and report on their findings for the broader university community. Ultimately, these publicly viewable scholarly portfolios will lead to a gallery of evidence-based practices constructed on Purdue's campus to share with other instructors at Purdue and around the world. For those interested, this will also serve as the first step toward conference presentations and formal publications as well.

## **IMPACT Informed Learning Project**

The IMPACT Informed Learning project is an opportunity for instructors to create assignments that help students use information in more purposeful ways in their courses. Instructors attend a day-long summer workshop, where they work with Libraries faculty and staff to transform an assignment that enables students to use information more effectively in their disciplines. In the academic year following the workshop, instructors implement the new assignments, and share assessment data related to student learning in the assignment with the IMPACT group. Since the launch of the IMPACT Informed Learning project in the summer of 2019, nine instructors from a range of disciplines have transformed and integrated assignments that teach students to use information more explicitly into their courses.

## **THE PURDUE TEACHING AND LEARNING EXCELLENCE INITIATIVE ROAD MAP**

The IMPACT program is also an integral part of the Provost's road map for transformative undergraduate education, and is highlighted in the second road:

One aspect of the Transformative Education Purdue Move is transforming teaching and learning so that classes are taught in ways that research shows best facilitate student learning. The IMPACT program has been leading the way, supporting over 300 instructors in transforming nearly 600 courses across all Purdue schools and colleges. 8 Instructional Innovation grants, co-funded by ITaP and the Provost's Office have supported the creation and testing of new teaching technologies.

Many faculty find exciting, innovative ways to teach their courses, and conduct research on effective pedagogies. IMPACT has shown we have successful mechanisms to disseminate and scale-up tested innovations. Going forward, we will create a hub to more intentionally innovate, incubate, and scale-up teaching innovations. Initiatives may include funding innovation grants for instructors to incubate ideas and opportunities to prototype the classroom of the future, and a stage gate-type process to assist instructors with developing their ideas further and assist the university in scaling the idea to the broader campus. This teaching innovation hub will have a research lens, streamlining the process for conducting classroom research, and through collaboration with the Executive Vice President for Research and Partnerships, strengthen connections to external funding sources for scholarship on teaching and learning. One tool in development to help streamline this effort is a common IRB for faculty who would like to integrate their research with their course curriculum.

More information about the Road Map can be found at:

<https://www.purdue.edu/provost/about/provostInitiatives/excellence/roadmap.html>

## **SUMMARY**

IMPACT positively influences teaching and learning at Purdue. 350 faculty completed the IMPACT program, and many report improving their own teaching self-efficacy and satisfaction, improving student outcomes, and more favorable views of their students. Additionally, IMPACT faculty successfully make their courses more student-centered without removing the rigor for which Purdue is known. As a result, more students successfully navigate courses, including large, foundational courses, thus decreasing student time to degree and cost. With over 70% of all undergraduates enrolling in an IMPACT course each semester, the reach and influence of IMPACT is substantial. Institutional commitments—including ongoing IMPACT training/support and the creation of new active-learning classrooms—contribute to a culture change at Purdue that emphasizes student-centered teaching and learning.

The partnership and work represented by IMPACT drives ongoing excellence at Purdue and keeps Purdue at the forefront of transformative education nationally and globally.